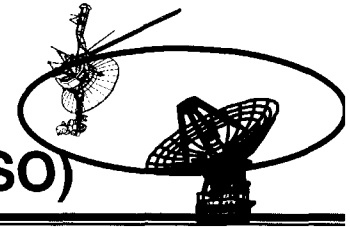


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InterPlanetary Network and Information Systems Directorate (IPN-ISD)  
Deep Space Mission Systems (DSMS)

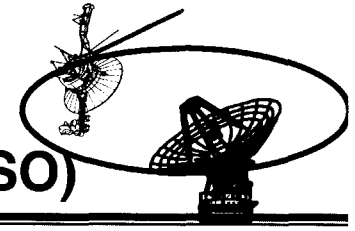


**Resource Allocation Planning & Scheduling Office (RAPSO)**

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## **AGENDA**

- Responsibility
- Process
- DSN Configuration

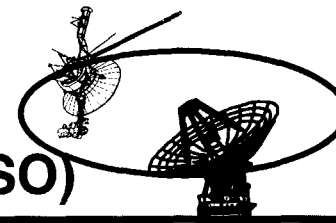


## **JPL Resource Allocation Planning & Scheduling Office (RAPSO)**

### **RESPONSIBILITY**

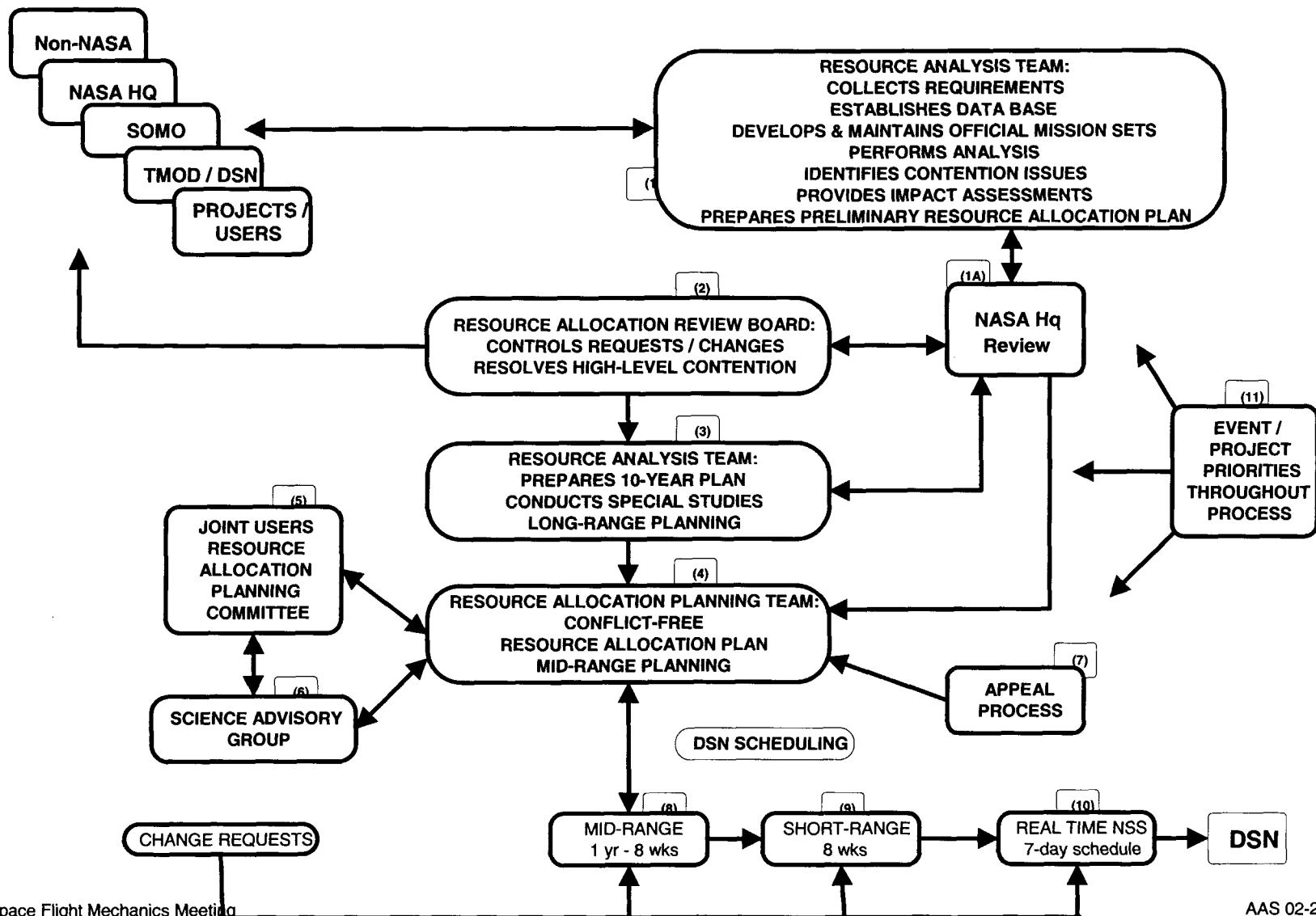
RAPSO is responsible for managing the process that:

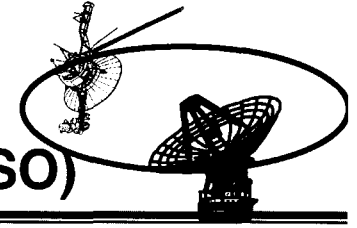
- Plans and schedules the assignment of Deep Space Network (DSN) ground data systems in support of customer programs and projects.
- Conducts conflict resolution reviews and meetings.
- Performs DSN impact analyses and special studies.
- Maintains and disseminates official JPL mission sets.
- Produces periodic plans, forecasts, and detailed schedules for DSN operational support.
- Develops and maintains the associated software tools and data bases.



# Resource Allocation Planning & Scheduling Office (RAPSO)

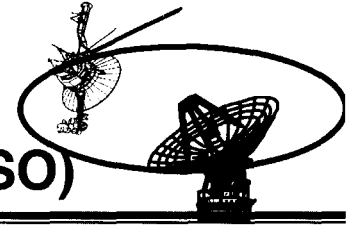
## RAPSO PROCESS





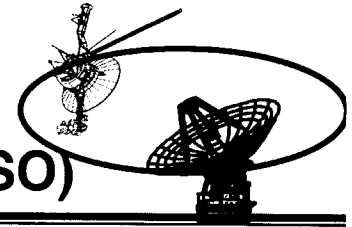
## **RAPSO PROCESS DESCRIPTION**

- (1) & (3) Resource Analysis Team
- Project Service Level Agreement (PSLA) Analysis
  - Special Studies & Impact Assessments
  - DSN Resource Allocation Plans



## **RAPSO PROCESS DESCRIPTION (Cont'd)**

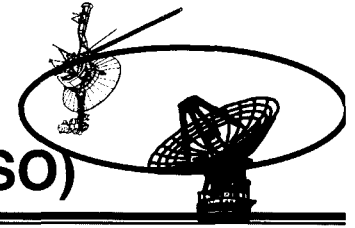
- (1A) NASA Headquarters Code S Science Review Board
- Meets before Resource Allocation Review Board (RARB)
  - Provides science mission priorities for use in resolving contention, if needed



## **RAPSO PROCESS DESCRIPTION (Cont'd)**

### **(2) Resource Allocation Review Board (RARB)**

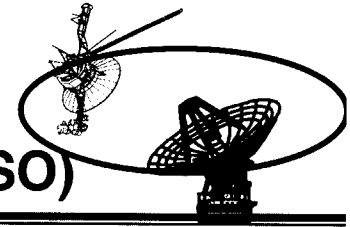
- Held in February and August to resolve 26m / 34m / 70m contention.
- Participation by all affected Project Managers and Project Scientists, or their representatives.
- DSN users currently updating requirements.
- Next RARB will be held 12 February 2002



## **JPL Resource Allocation Planning & Scheduling Office (RAPSO)**

### **RAPSO PROCESS DESCRIPTION (Cont'd)**

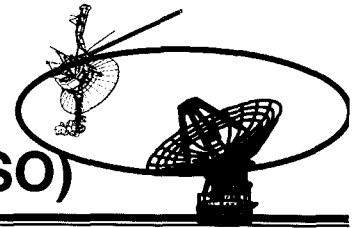
- (4) Resource Allocation Planning Team (RAPT)
  - Meets weekly
  - Project and DSN scheduling representatives
  - Produces conflict-free plan by consensus
  - Appeal route available, if necessary
- (5) Joint User Resource Allocation Planning (JURAP) Committee
  - Meets monthly
  - Project Mission Operations Managers and DSN Operations Manager
  - RARB action item follow-up / discussion
  - Identify future requirements and conflicts
  - Interim RARB sets priorities



## **RAPSO PROCESS DESCRIPTION (Cont'd)**

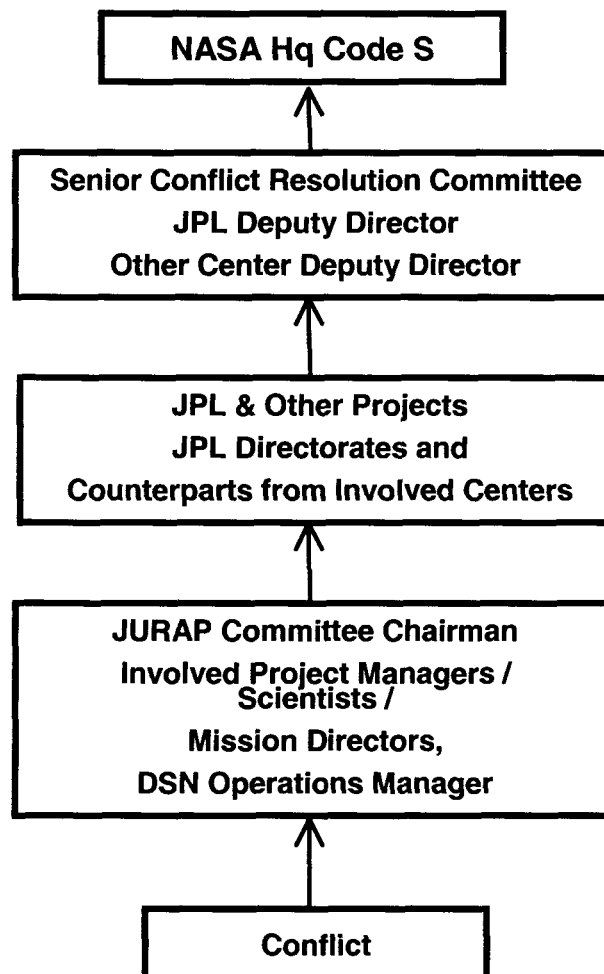
### **(6) Science Advisory Group**

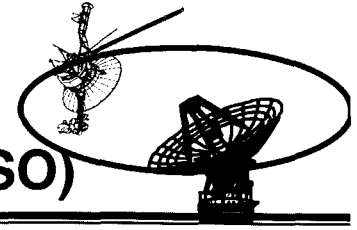
Standing group, activated and chaired by Dr. E. J. Smith,  
RAP Science Advisor, to address conflicts involving science  
data requirements or specific science events



## RAPSO PROCESS DESCRIPTION (Cont'd)

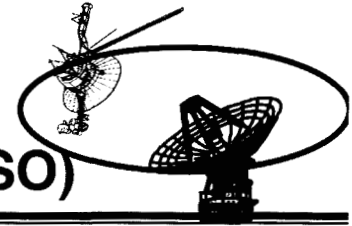
### (7) Appeal Process:





## **RAPSO PROCESS DESCRIPTION (Cont'd)**

- (8) Mid-Range: 1 year - 8 weeks
  - "RAP Book" on RAP server, for User evaluation
  - Updated . 2 - 3-week intervals
  - Contains requested DSN activity
  - Identifies conflicts
  - Used by RAPT to negotiate Short-Range Plan
- (9) Short-Range: 8 weeks
  - Conflict-free
  - Released to DSN electronically every 4 weeks
- (10) Real Time Network Support Subsystem (NSS): 7-day schedule
  - Changed as required
  - Executed by Ops Chief

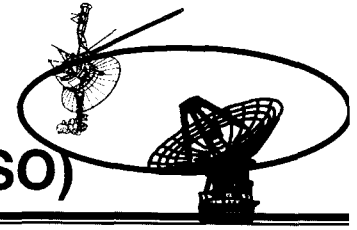


## RAPSO PROCESS DESCRIPTION (Cont'd)

### (11) Event Priorities:

PRIORITY	ACTIVITY PERIOD & PRIORITY CRITERIA	EXAMPLES
1	Spacecraft emergency	Determined in real time
2	Mandatory for achievement of primary objectives. Support essential to spacecraft survival.	Periodic uplink to reset critical systems; launch; planetary orbit insertion; some TCMs*
3	Major, unique, scientific event. Timecritical.	Planetary encounter; major unforeseen scientific event (e.g., CME, supernova).
4	Minimum DSS maintenance, minimum support to maintain science validity.	Critical maintenance; short spans of data acquisition to assure data continuity.
5	Mandatory for achievement of primary objectives. Not time-critical.	Some TCMs*; includes spacecraft health and condition monitoring, and planetary astronomy.
6	Time-critical events not essertial to primary mission objectives.	Includes radio astronomy.
7	Repeated scientific opportunities. Not timecritical.	Improvement upon minimum science return; includes host country radio sciences.

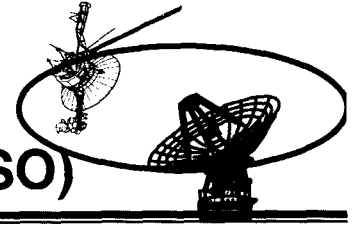
\* Trajectory Correction Maneuvers (TCMs) are considered to fall into two categories: (1) TCMs that are constrained to a particular time may be considered Priority 2, e.g., injection into planetary orbit; (2) TCMs that offer more flexibility in planning are considered Priority 5. The projects are expected to make every effort to avoid conflicts by coordinating their plans with the other users.



## **RAPSO 2001**

Reduced network loading with streamlined staffing through a less labor-intensive approach to DSN planning and scheduling, using improved processes and tools for better reliability

- **PROCESS CHANGES**
  - NASA HQ Office of Space Science (Code S) Science Review Board
  - Seamless process from Long Range Plan to Real-time scheduling
- **SOFTWARE TOOLS**
  - TIGRAS (TMOD Integrated Ground Resource Allocation Scheduling)
  - MADB (Mission and Assets Database)

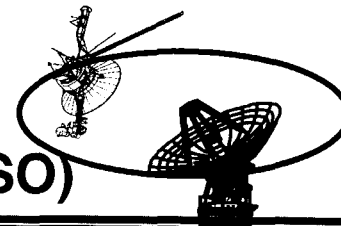


## PROCESS CHANGES

- CODE S SCIENCE REVIEW BOARD
  - RARB-like, with science representation from each project
    - User requirements (loading charts)
    - Resources
    - Contention charts
    - Priority recommendations
  - Board Members: HQ Program Executives / Scientists
  - Results: Priorities



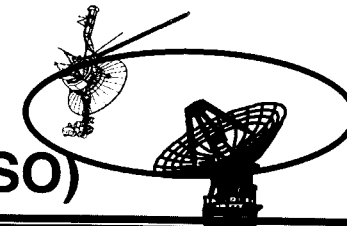
InterPlanetary Network and Information Systems Directorate (IPN-ISD)  
Deep Space Mission Systems (DSMS)



**JPL** Resource Allocation Planning & Scheduling Office (RAPSO)

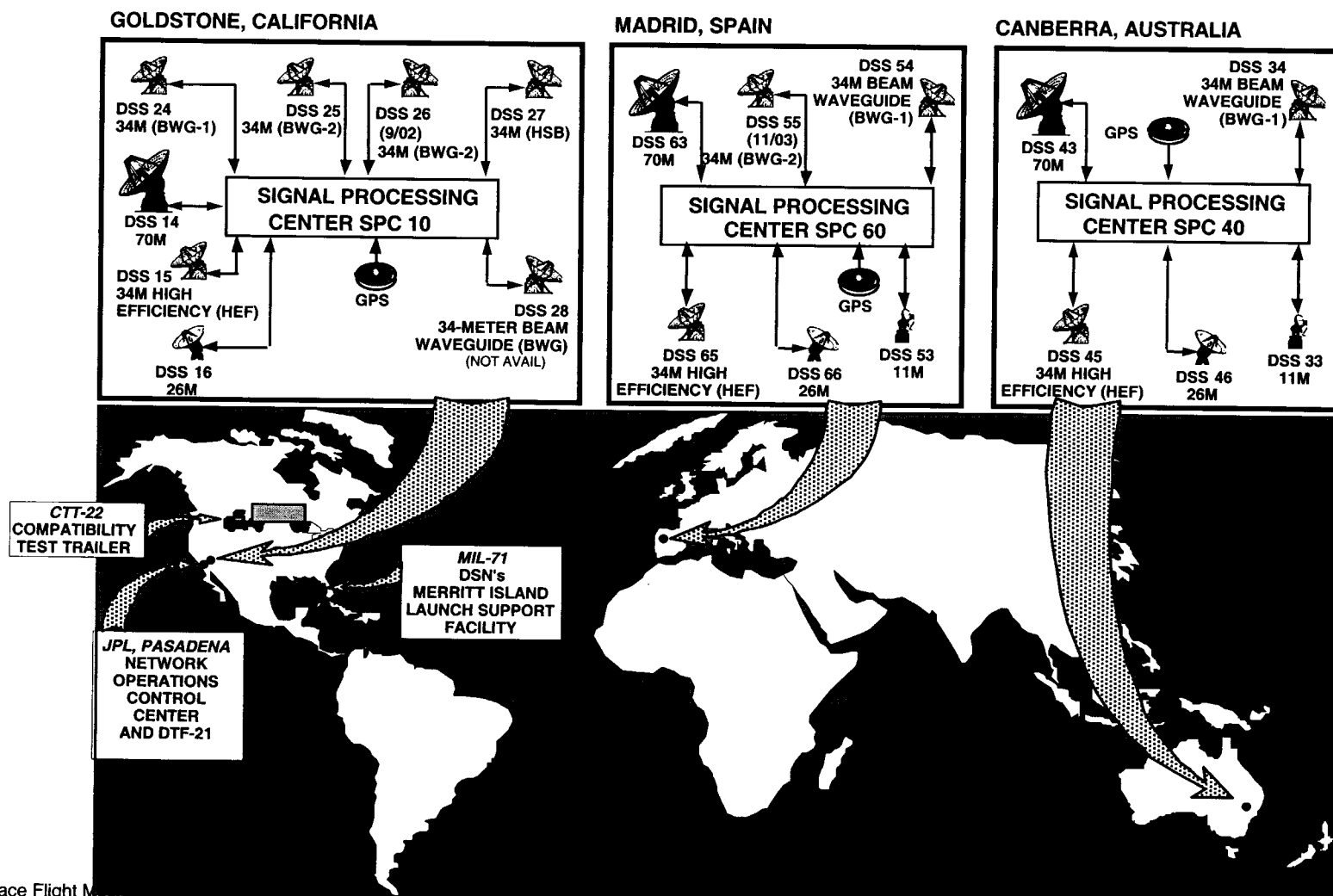
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## APPENDIX



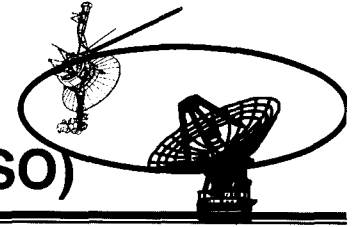
# JPL Resource Allocation Planning & Scheduling Office (RAPSO)

## DSN CONFIGURATION





InterPlanetary Network and Information Systems Directorate (IPN-ISD)  
Deep Space Mission Systems (DSMS)



**Resource Allocation Planning & Scheduling Office (RAPSO)**

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**DSN User / Mission Planning Set**

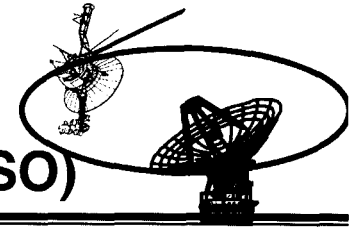
**DSN 26M LEO User / Mission Planning Set**

**DSN User / Future Mission Planning Set**

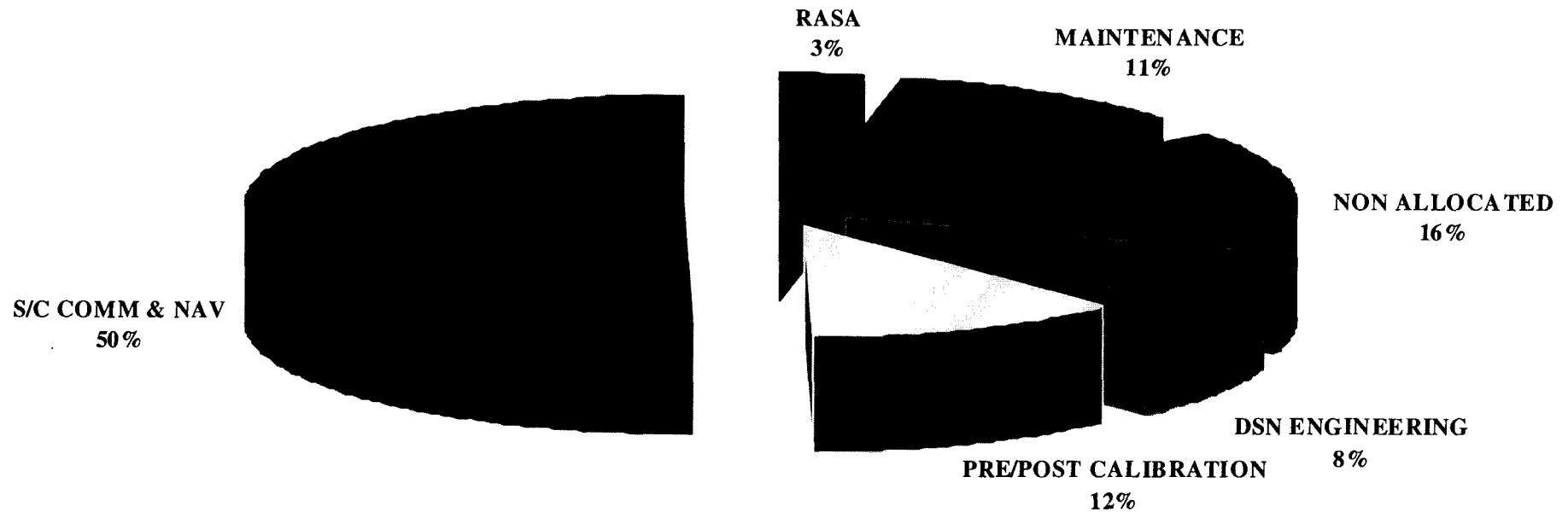
**Major DSN Downtimes by Site by Year**

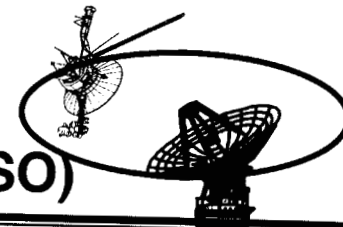
Go to this web page to view the items listed above:

**<http://rapweb.jpl.nasa.gov/planning.htm>**



## DSN Utilization for December 2001 Entire Network





## DSN Mission Support

